CHAPTER 12
MAINTENANCE MANUAL
FOR
STORMWATER BEST MANAGEMENT PRACTICES

12.1 Introduction

As Fayette County urbanizes, the impact of urbanization on the water resources of the county's watersheds becomes more apparent. Development has altered stormwater drainage patterns and characteristics, sometimes resulting in flooding. The developed uses of land in the county have resulted in the introduction to the waters of non-desirable substances. These substances are known as nonpoint source pollution and include sediment, nutrients such as phosphorous, motor oil, lawn and garden care products, and anything else that washes from streets and developed property into the county's streams.

Stormwater management efforts in Fayette County have been focused on reducing the risks of downstream flooding. An important tool has been the detention basin, which temporarily stores runoff during large storms and releases it slowly so that peak flows are reduced.

In some instances, these detention basins have been combined with amenity ponds or water quality ponds to produce multi-functional ponds. In other instances, water quality ponds with no storage for flood protection have been constructed. In some instances, practices other than ponds have been constructed to mitigate flooding and/or protect water quality. All of these practices are generally referred to as BMPs – Best Management Practices.

Fayette County is transitioning from a stormwater management program that only considers flooding to one that considers both flooding and water quality. This transition mandates that more complicated BMPs be installed to control the small storms that occur frequently and impact water quality as opposed to larger, less frequent storms that cause flooding. These BMPs include infiltration areas, wet ponds, sand filters, vegetative swales, oil and grease removal facilities, and constructed wetlands.

The water quality practices are inherently more complex, not only in their function and operations, but also in the numbers and types of materials used to construct them. They commonly include natural materials like aquatic vegetation and microorganisms. The increased complexity demands a greater level of maintenance and management to assure safe and effective operation. No two BMPs are the same and their maintenance needs are as different as the BMPs themselves. This requires expertise and judgment to be involved in the BMP maintenance process, thereby requiring a higher level of skill for the majority of the maintenance.

This manual for maintaining BMPs has been developed as a part of Lexington's watershed management program. The manual includes:

- a brief discussion of each BMP
- a listing of the mechanisms used to protect water quality
- a listing of the maintenance required
- a listing of the inspection required
- the assigning of responsibility for maintenance between the property owner and the Lexington-Fayette Urban County Government (LFUCG)

The manual also includes a checklist for use in inspection of each practice or type of practice. The completed checklists will be placed in the LFUCG Geographical Information System (GIS) as data tables associated with the location of each BMP.

12.2 Dry Detention Pond

12.2.1 Description

An area used to detain stormwater for a relatively short period of time to reduce downstream peak discharge rates. The area should go dry between storms. This is the traditional type of detention system used in "drainage" programs for many years to help provide flood protection. Any sediment that collects in the bottom of the basin reduces the capacity for flood control.

12.2.2 Pollutant Removal Mechanisms

Settling or sedimentation of larger, heavier particles is the primary mechanism. In some systems, limited infiltration may occur.

12.2.3 Operation, Maintenance, and Inspection

Operation
Successful operation depends on maintaining the storage volume, the discharge rate, and, in many cases, the system's infiltration capability.

Maintenance
Activities necessary to maintain the functioning of a dry detention system include:

- Frequent removal of accumulated solids, debris, and litter from the detention area, especially from the low flow channel; sediments should be removed when they are dry and have cracked, separating from the bottom and vegetation
- Removal of debris from vegetated area to prevent damage to vegetation and to maintain visual appearance
- Removal of debris from the bottom of the pond to reduce clogging of outlet structures, trash racks, and other mechanical components
- Mowing
- Removal of vegetation, such as small trees, which can damage the embankment
- Vegetative stabilization of eroding sides or bottom

Inspection
Inspections are necessary to assure proper discharge, prevention of soggy bottoms, assure healthy vegetative growth, and to monitor accumulation of sediments. Inspections should include the following:

- Obstructions of the inlet or outlet devices by trash and debris
- Excessive erosion or sedimentation
- Cracking or settling of the dam
- Deterioration of pipes
- Condition of the emergency spillway
- Stability of the side-slopes

- Up and downstream channel conditions
- Signs of vandalism

12.2.4 Responsibility of Lexington-Fayette Urban County Government (LFUCG)

- Inspect the facility once each year and schedule any appropriate maintenance activities in accordance with the items listed above.
- Conduct all maintenance activities except those of commercial property owner listed below. Removal of deposited sediment is envisioned approximately once every five years.

12.2.5 Responsibility of Commercial Property Owner

- Conduct all required maintenance.

12.3 Dry Extended Detention Pond

12.3.1 Description

A dry detention system with a discharge structure that is modified to extend the detention time of runoff, typically up to 24 to 48 hours. The modified discharge may also include some type of filtering device (i.e., gravel or sand envelope) to improve the removal of particulate pollutants.

Dry extended detention systems may be designed as either on-line or off-line facilities. A dry extended detention pond detains runoff from small, frequent storms and the "first flush" from larger storms in a lower second stage, with a normally dry upper stage for detention of larger storms for flood control. To improve stormwater treatment, the second stage can be designed and managed as a shallow marsh.

12.3.2 Pollutant Removal Mechanisms

- Settling or sedimentation
- Plant uptake and bacterial activity in two-stage systems with a shallow marsh
- In some systems, limited infiltration may occur.

12.3.3 Operation, Maintenance, and Inspection

Operation
Successful operation depends on maintaining the storage volume, the discharge rate, and, in many cases, the system's infiltration capability.

Maintenance
Activities necessary to maintain the functioning of a dry extended detention system include:

- Frequent removal of accumulated solids, debris, and litter from the detention area, especially the low flow channel if included. Sediments should be removed when they are dry and have cracked, separating from the bottom and vegetation.
- Removal of debris from the control device since it typically will have a small orifice.
- Mowing and removal of vegetation. The use of low growing, native grasses is recommended to minimize mowing frequency and the need for irrigation and fertilizers, which should only be used when necessary.
- Vegetative stabilization of eroding sides or bottom.
- Management of aquatic plants if portions of the basin have been designed as a constructed wetland.

Inspection
Inspections are necessary monthly and after large storms to assure proper discharge, prevention of soggy bottoms, assure healthy vegetative growth, and to monitor accumulation of sediments. Inspections should include the following:

- Obstructions of the inlet or outlet devices by trash and debris
- Excessive erosion or sedimentation
- Cracking or settling of the dam
- Low spots in the bottom of an extended detention facility
- Deterioration of pipes
- Condition of the emergency spillway
- Stability of the side-slopes
- Up and downstream channel conditions
- Signs of vandalism

12.3.4 Responsibility of Lexington-Fayette Urban County Government (LFUCG)

- Inspect the facility once each year and schedule any appropriate maintenance activities in accordance with the items listed above.
- Conduct all maintenance activities except those of commercial property owner listed below. Removal of deposited sediment is envisioned approximately once every two to five years.

12.3.5 Responsibility of Commercial Property Owner

- Conduct all required maintenance.

12.4 Wet Detention Pond

12.4.1 Description

A detention system with a permanent pool of water that is completely or partially displaced by stormwater from the contributing drainage area. Water is temporarily stored before it is slowly released. A wet detention system is essentially a small lake with rooted wetland vegetation in the littoral zone.

12.4.2 Pollutant Removal Mechanisms

- Settling or sedimentation
- Chemical flocculation, which occurs when heavier sediment particles overtake and coalesce with smaller, lighter particles to form a still larger particle
- Dissolved stormwater pollutants are reduced by a variety of biological processes including filtering, adsorption onto bottom sediments, uptake by aquatic plants including algae, and metabolism by microorganisms inhabiting bottom sediments and aquatic plants
- Removal of stormwater pollutants primarily occurs during the relatively long quiescent period between storms

12.4.3 Operation, Maintenance, and Inspection

Operation
Successful operation depends on good design, construction, and maintenance, especially of the discharge structure and littoral zone vegetation.

Maintenance
Activities necessary to maintain the functioning of wet detention system can be broken down into two categories, routine and corrective.

Specific routine maintenance activities include:

- Grass mowing and removal from side slopes and the embankment
- Removal of trees, brush, and animal burrows from the embankment
- Vegetative cover stabilization to prevent erosion of side slopes and the embankment
- Removal and disposal of trash and debris, especially from inlet or outlet structures
- Monitoring and periodic removal of nuisance species in the littoral zone
- Thinning and transplanting of thriving littoral zone plants as needed to maintain good growth throughout the littoral zone
- Monitoring for mosquitoes and introduction of natural predators as needed
- Monitoring of sediment accumulations in forebays or in the pond bottom
- Monitoring of channel erosion in downstream conveyances

Specific corrective maintenance activities include:

- Pond dewatering and removal of accumulated sediments. The frequency will depend on a variety of factors including use of pretreatment BMPs or forebays, contributing drainage area, land use, sediment loading, etc. A good rule of thumb is to remove sediment when 10 to 20 % of the system's storage volume has been lost.
- Structural repairs to inlets, outlets, or discharge structure, including the emergency spillway.
- Repairs to the dam, embankment, or slopes to prevent erosion or piping.
- Repairs to fences, if applicable.

Inspection

Inspections are necessary monthly and after large storms to assure proper discharge, monitor accumulations of trash and debris, monitor sediment accumulations in forebays or inlets, determine mowing or vegetation removal needs, and determine health of littoral zone vegetation. Inspections should include the following:

- Obstructions of the inlet or outlet devices by trash and debris
- Excessive erosion or sedimentation
- Cracking or settling of the dam
- Low spots in the bottom of an extended detention facility
- Deterioration of pipes
- Condition of the emergency spillway
- Stability of the side-slopes
- Up and downstream channel conditions
- Signs of vandalism

Monitor pond sediment accumulations annually. This can be done by coring, installation of a permanent measuring device such as a "yardstick," or even by mapping the pond bathymetry in larger ponds.

12.4.4 Responsibility of Lexington-Fayette Urban County Government (LFUCG)

- Inspect the facility once each year and schedule any appropriate maintenance activities in accordance with the items listed above.
- Conduct all maintenance activities except those of commercial property owner listed below. Removal of deposited sediment is envisioned approximately once every five years.

12.4.5 Responsibility of Commercial Property Owner

- Conduct all required maintenance.

12.5 Constructed Wetlands

12.5.1 Description

A runoff storage and treatment area constructed in uplands that is vegetated with aquatic macrophyte plants native to the area. These systems attempt to incorporate properties of natural wetlands such as shallow, sheet flow through dense, diverse assemblage of wetland plants that also serve as habitat for microorganisms.

12.5.2 Pollutant Removal Mechanisms

- Settling or sedimentation
- Adsorption to sediments, vegetation, or detritus
- Filtration by plants
- Microbial uptake and/or transformations
- Uptake by wetland plants or algae
- Extended detention
- Removal of stormwater pollutants primarily occurs during the relatively long quiescent period between storms

12.5.3 Operation, Maintenance, and Inspection

Operation
Successful operation depends on good design, construction, and maintenance, especially of the sediment forebays, wetland vegetation, and the discharge structure.

Maintenance
Activities necessary to maintain the long term functioning of a constructed wetland system include the following:

- Grass mowing and removal from side slopes and the embankment
- Removal of trees, brush, and animal burrows from the embankment
- Vegetative cover stabilization to prevent erosion of side slopes and the embankment
- Removal and disposal of trash and debris, especially from inlet or outlet structures
- Monitoring and periodic removal of nuisance plant and animal species
- Thinning and transplanting of thriving wetland plants as needed to maintain good growth throughout the constructed wetland
- Monitoring for mosquitoes
- Monitoring and removal of sediment accumulations in forebays or within the constructed wetland

Inspection
- Inspect quarterly and after large storms to assure proper discharge, monitor accumulations of trash and debris, monitor sediment accumulations in forebays or

inlets, determine mowing or vegetation removal needs, and determine health of wetland vegetation.

- Closely monitor the wetland plant community, both during the growing season and, if needed, during the dry season, to assure healthy growth of desired plants. Remove exotic or nuisance species as soon as they appear to limit their establishment and areal extent. Thin or transplant plants from areas where they are growing densely and use them to further establishment or growth in areas with less vigorous plant growth.
- Monitor sediment accumulations in forebays semiannually. Sediments should be removed when 25% of the storage volume of the forebay has been lost.

12.5.4 Responsibility of Lexington-Fayette Urban County Government (LFUCG)

- Inspect the facility once each year and schedule any appropriate maintenance activities in accordance with the items listed above.
- Conduct all maintenance activities except those of commercial property owner listed below.

12.5.5 Responsibility of Commercial Property Owner

- Conduct all required maintenance.

12.6 Biofiltration Practices

12.6.1 Description

Biofiltration is a term used to describe the generally simultaneous processes of filtration, infiltration, adsorption, ion exchange, and biological uptake of pollutants from runoff as it flows through a vegetated stormwater management system. Biofiltration practices include vegetated swales, filter strips, and bioretention areas. Swales are conveyances where the flow passes through vegetation at some specified depth. Filter strips are broad surfaces that receive flow as a well distributed thin sheet. Bioretention practices capture sheet flow from impervious surfaces and treats it by infiltration, filtration, plant uptake, and microbial processes as the runoff flows through native forest or landscaped areas.

12.6.2 Pollutant Removal Mechanisms

- Infiltration, ion exchange, and adsorption
- Settling
- Vegetative filtration and uptake
- Microbial action
- The degree to which the various pollutant removal mechanisms operate depends on soil properties, condition and types of plants, depth, water velocity, slope, and residence time.

12.6.3 Operation, Maintenance, and Inspection

Operation
Successful operation depends on proper design, especially estimation of hydraulic resistance times and infiltration rates, proper construction and regular maintenance.

Maintenance
Activities necessary to maintain the functioning of biofiltration practices include:

- Vegetation removal to maintain adequate hydraulic functioning. Biofilter turf grass height should not exceed six inches nor be less than two inches. Excessively long grass can flatten when water flows over it, preventing sedimentation. Additionally, if not removed, decaying vegetation could release captured nutrients and other pollutants.
- Frequent removal of accumulated solids, debris, and litter. Sediments should be removed when they reach 20% of the design depth in any spot, cover or hinder the growth of vegetation, or otherwise interfere with the operation. Maintenance workers should give special attention to sediment accumulation in the upper portion of swales after major storm events. Sediment and large debris should be removed from biofilters at least twice annually and more frequently if needed.
- Vegetative stabilization of eroding sides or bottom or of bare areas created when removing sediments. Fertilizer use should be minimized. Vegetation should be

maintained and replanted early enough in the growing season so that it is well established before the rainy season or before the prime growing period ends.

- If swale blocks are used to promote infiltration or sedimentation, special attention needs to be paid to their maintenance. Sediments need to be carefully removed without damaging the swale block or its associated vegetation.
- If curb cuts are used as inflows to biofilters, sediments and vegetation growths should be removed from the curb cut when they begin to interfere with the inflow.
- Roadside shoulder scraping and ditch cleaning should be based on hydraulic necessity, not simply a timed schedule. When these operations are performed, only the amount of sediment to restore hydraulic capacity should be removed. More importantly, the shoulder and swale should be revegetated immediately to minimize erosion and restore treatment effectiveness. Operations should be done in the dry season.

Inspection

- Inspect semiannually and after large storms to assure proper flow, vegetative growth, and to monitor accumulation of sediments, trash, and debris.

12.6.4 Responsibility of Lexington-Fayette Urban County Government (LFUCG)

- Inspect the facility once each year and schedule any appropriate maintenance activities in accordance with the items listed above.
- Conduct all maintenance activities except those of commercial property owner listed below.

12.6.5 Responsibility of Commercial Property Owner

- Conduct all required maintenance.

12.7 Infiltration Practices

12.7.1 Description

A family of practices in which the "treatment volume" is infiltrated into the soil rather than discharged off-site. Infiltration practices include basins and dry wells.

12.7.2 Pollutant Removal Mechanisms

The primary "treatment" mechanism is the infiltration and evaporation of runoff. This reduces the total volume of stormwater leaving the site, thereby reducing the total pollutant loading. Ancillary benefits of reducing stormwater volume include a decrease in stream channel erosion and loss of stream habitat.

Pollutant removal occurs as runoff passes through the soil profile and/or the vegetation root mass. Pollutants are trapped, bound, or decomposed in the vegetation, its roots, and in the pore spaces between the soil particles, while runoff passes into the ground. Soils must have an appropriate infiltration rate, contain sufficient organic matter, and maintain aerobic conditions to minimize migration of pollutants into the ground water.

12.7.3 Operation, Maintenance, and Inspection

Operation
Infiltration practices all depend on the ability of stormwater to pass through the vegetation and soil into the ground. Therefore, long term operation of the practice depends on maintaining its permeability.

Maintenance
Maintenance activities shall include:

- Removal of accumulated solids
- Mowing and removal of vegetation
- Vegetative stabilization of eroding sides or bottom
- Rototilling, disking, or aerating the bottom or bottom vegetation
- Clearing materials that have accumulated in the discharge structure
- Cleaning pretreatment BMPs (i.e., swales, sediment sumps) so they can continue to protect the infiltration practice

Inspection
- Inspect the facility semiannually (just before the wet season and at the end of it) and after large storms. If there is still water in the BMP after 72 hours (or after 24-36 hours for vegetated systems), it is time to clean it and restore its percolation capacity. Cleanout frequency will depend on whether the practice is on-line or off-line, vegetated or not vegetated, its design storage capacity, sediment loading, and use of pretreatment BMPs.
- Eroding sides or bottoms shall be revegetated as soon as possible

- Revegetate the contributing area where needed to stabilize and reduce generation of particulates

12.7.4 Responsibility of Lexington-Fayette Urban County Government (LFUCG)

- Inspect the facility once each year and schedule any appropriate maintenance activities in accordance with the items listed above.
- Conduct all maintenance activities except those of commercial property owner listed below.

12.7.5 Responsibility of Commercial Property Owner

- Conduct all required maintenance.

12.8 Modular Pavement

12.8.1 Description

Pavement consisting of strong structural materials having regularly interspersed void areas that are filled with pervious materials such as sand, gravel, or sod. Generally used in low-volume traffic areas such as the outer parts of parking lots or in parking lots serving parks or recreational areas.

12.8.2 Pollutant Removal Mechanisms

- Percolation of rainfall and runoff through the voids into the underlying permeable base and then into the soil
- Filtration of rainfall and runoff by the vegetation that can grow in the voids

12.8.3 Operation, Maintenance, and Inspection

Operation
Successful operation depends on maintaining the percolation rate of the void spaces and the underlying base and soils. Keys to assuring long-term performance are accurate estimation of the soil's percolation rate, proper construction, and regular maintenance.

Maintenance
Activities necessary to maintain the performance of modular pavements include:

- "Good housekeeping" practices by the users to minimize the production and transport of sediment onto the modular pavement. This includes vegetative stabilization of adjacent areas that may erode and become a source of sediments.
- Replacement of base and underlying soils if they become clogged and water ponding persists.
- When turf is incorporated into the installation, normal turf maintenance will be necessary. However, mowing is seldom required in areas of frequent traffic and fertilizers and pesticides should be used sparingly since this may adversely affect concrete products and groundwater.

Inspection
- All modular pavements should be inspected several times in the first few months after construction to assure that they are working correctly and were installed properly. Inspections should be conducted after storms to check for long duration surface ponding that may indicate local or widespread clogging.

12.8.4 Responsibility of Commercial Property Owner

- Conduct all required maintenance.

12.9 Stormwater Filters

12.9.1 Description

A family of stormwater treatment practices which typically consist of a storage BMP in conjunction with a filtering device. The most common filter media is sand, but filters have been made of peat/sand mixtures and even from leaf compost.

12.9.2 Pollutant Removal Mechanisms

- Settling or sedimentation
- Filtration by sand or other filter media
- Microbial uptake and/or transformations

12.9.3 Operation, Maintenance, and Inspection

Operation
Successful operation depends on good design, construction, and most importantly, on regular maintenance, especially of the filter media to prevent clogging.

Maintenance
Activities necessary to maintain the long term functioning of stormwater filtrations systems include:

- Grass mowing and removal from side slopes and the embankment
- Removal of trees, brush, and animal burrows from the embankment
- Vegetative cover stabilization to prevent erosion of side slopes and the embankment
- Removal and disposal of trash and debris, especially from inlet or outlet structures
- Removal of sediments and other materials that accumulate in pretreatment practices, such as sediment traps and forebays
- Periodic scraping and aeration of the filter media, with partial removal

Inspection
- Inspect monthly and after large storms to assure proper discharge, monitor accumulations of trash and debris, monitor sediment, accumulations in forebays or inlets, determine mowing or vegetation removal needs, and determine whether the filter media is clogging.
- Closely monitor clogging of the filter media to determine when maintenance is needed.
- Monitor sediment accumulations in sediment traps semiannually. Sediments should be removed when 25% of the storage volume has been lost.

12.9.4 Responsibility of Commercial Property Owner

- Conduct all required maintenance.

12.10 Prefabricated Treatment Devices

12.10.1 Description

These BMPs consist of flow-through concrete structures with a settling or separation unit.

12.10.2 Pollutant Removal Mechanisms

- Swirl action
- Indirect filtration

12.10.3 Operation, Maintenance, and Inspection

Operation
Successful operation depends on good design, construction, and, most importantly, on regular cleaning.

Maintenance
Activities necessary to maintain the long-term functioning of stormwater filtration systems include:

- Removal of sediments and other materials that accumulate in the device

Inspection
Inspect monthly and after large storms to assure proper operation.

Inspection Checklists

Lexington-Fayette Urban County Government

Operation and Maintenance Inspection Report for Stormwater Management Ponds

BMP Name/GIS Number _____ Subdivision _____
Inspection Name _____ Address _____
Inspection Date _____
Stormwater Pond _____
Normal Pool _____
Normally Dry _____ Watershed _____

Items Inspected	Checked Yes	Checked No	Maintenance Needed Yes	Maintenance Needed No	Inspection Frequency	Remarks
I, Pond Components						
A. Embankment and emergency spillway					A,S	
1. Vegetation and ground cover adequate						
2. Embankment erosion						
3. Animal burrows						
4. Unauthorized plantings						
5. Cracking, bulging, or sliding of dam a. Upstream face						
b. Downstream face						
c. At or beyond toe Upstream						
Downstream						
d. Emergency spillway						
6. Pond, toe & chimney drains clear and functioning						
7. Seeps/leaks on downstream face						
8. Slope protection or riprap failures						
9. Vertical and horizontal alignment of top of dam as per "As-Built" plans						
10. Emergency spillway clear of obstructions and debris						
11. Other (specify)						
B. Riser and principal spillway					A	
Type: Reinforced concrete ____ Corrugated pipe ____ Masonry ____ 1. Low flow orifice obstructed						
2. Low flow trash rack a. Debris removal necessary						
b. Corrosion control						
3. Weir trash rack maintenance						
a. Debris removal necessary						
b. Corrosion control						
4. Excessive sediment accumulation inside riser						
5. Concrete/masonry condition riser and barrels a. Cracks or displacement						

Inspection Frequency Key: A = Annual, M = Monthly, S = After major storm

Lexington-Fayette Urban County Government
Operation and Maintenance Inspection Report for Stormwater Management Ponds
(continued)

Items Inspected	Checked Yes	Checked No	Maintenance Needed Yes	Maintenance Needed No	Inspection Frequency	Remarks
I, Pond Components						
b. Minor spalling (< 1")						
c. Major spalling (rebars exposed)						
d. Joint failures						
e. Water tightness						
6. Metal pipe condition						
7. Control valve a. Operational/exercised						
b. Chained and locked						
8. Pond drain valve a. Operational/exercised						
b. Chained and locked						
9. Outfall channels functioning						
10. Other (specify)						
C. Permanent pool (wet pond)					M	
1. Undesirable vegetative growth						
2. Floating or floatable debris removal required						
3. Visible pollution						
4. Shoreline problems						
5. Other (specify)						
D. Sediment forebays						
1. Sedimentation noted						
2. Sediment cleanout when depth < 50% design depth						
E. Dry pond areas					M	
1. Vegetation adequate						
2. Undesirable vegetative growth						
3. Undesirable woody vegetation						
4. Low flow channels clear of obstructions						
5. Standing water or wet spots						
6. Sediment and/or trash accumulation						
7. Other (specify)						
F. Condition of outfalls into pond					A,S	
1. Riprap failures						
2. Slope erosion						
3. Storm drain pipes						
4. Endwalls/headwalls						
5. Other (specify)						
G. Other					M	
1. Encroachments on pond or easement area						

Inspection Frequency Key: A = Annual, M = Monthly, S = After major storm

Infiltration Basin Maintenance Inspection Report

Date_____ Time _____

Project _____

Location _____

Individual Conducting the Inspection _____ "As Built" Plans available ___Y/N___

Inspection frequency shown in parentheses after item being considered

		Satisfactory	Unsatisfactory
1. Debris cleanout	(Monthly)		
Basin bottom clear of debris			
Inlet clear of debris			
Outlet clear of debris			
Emergency spillway clear of debris			
2. Sediment traps or forebays	(Annual)		
Obviously trapping sediment greater than 50% of storage volume remaining			
3. Vegetation	(Monthly)		
Mowing done when needed			
Fertilized per specifications			
No evidence of erosion			
4. Dewatering	(Monthly)		
Basin dewaters between storms			
5. Sediment cleanout of basin	(Annual)		
No evidence of sedimentation in basin			
Sediment accumulation does not yet require cleanout			
6. Inlets	(Annual)		
Good condition			
No evidence of erosion			
7. Outlets/overflow spillway	(Annual, After Major Storm)		
Good condition, no need for repair			
No evidence of erosion			
8. Structural repairs	(Annual, After Major Storm)		
Embankment in good repair			
Side slopes are stable			
No evidence of erosion			
9. Fences/access repairs	(Annual)		
Fences in good condition			
No damage which would allow undesired entry			
Access point in good condition			
Locks and gate function adequate			
Inspection Frequency Key	Annual, Monthly, After Major Storm		

Action to be taken:

If any of the answers to the above items are checked unsatisfactory, a time frame shall be established for their correction or repair

No action necessary. Continue routine inspections _____
Correct noted facility deficiencies by _____

Facility repairs were indicated and completed. Site reinspection is necessary to verify corrections or improvements.

Site reinspection accomplished on _____

Site reinspection was satisfactory. Next routine inspection is scheduled for approximately:

_____

_____
Signature of Inspector

Infiltration Swale Maintenance Inspection Report

Date_____ Time _____

Project _____

Location _____

Individual Conducting the Inspection _____ "As Built" Plans available ___Y/N___

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9. Inspection frequency shown in parentheses after item being considered

		Satisfactory	Unsatisfactory
1. Debris cleanout	(Monthly)		
Swales and contributing areas clean of debris			
2. Vegetation	(Monthly)		
Mowing done when needed			
Fertilized per specifications			
No evidence of erosion			
Minimum mowing depth not exceeded			
3. Dewatering	(Monthly)		
Swale dewaters between storms			
4. Check dams or energy dissipators	(Annual, After Major Storm)		
No evidence of flow going around structures			
No evidence of erosion at downstream toe			
5. Sediment deposition	(Annual)		
Swale clean of sediments			
6. Outlets/overflow spillway	(Annual, After Major Storm)		
Good condition, no need for repair			
No evidence of erosion			
Inspection Frequency Key	Annual, Monthly, After Major Storm		

Action to be taken:

If any of the answers to the above items are checked unsatisfactory, a time frame shall be established for their correction or repair

No action necessary. Continue routine inspections _____
Correct noted facility deficiencies by _____

Facility repairs were indicated and completed. Site reinspection is necessary to verify corrections.

Site reinspection accomplished on _____

Site reinspection was satisfactory. Next routine inspection is scheduled for approximately:

_____

_____
Signature of Inspector

Biofiltration Facility Maintenance Inspection Report

Date_____ Time _____

Project _____

Location _____

Individual Conducting the Inspection _____ "As Built" Plans available ___Y/N___

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10. Inspection frequency shown in parentheses after item being considered

		Satisfactory	Unsatisfactory
1. Debris cleanout	(Monthly)		
Biofilters and contributing areas clean of debris			
No dumping of yard wastes into biofilter			
Litter (branches, etc.) have been removed			
2. Vegetation	(Monthly)		
Plant height not less than design water depth			
Fertilized per specifications			
No evidence of erosion			
Grass height not greater than 6 inches			
Is plant composition according to approved plans			
No placement of inappropriate plants			
3. Dewatering	(Monthly)		
Biofilter dewaters between storms			
No evidence of standing water			
4. Check dams or energy dissipators	(Annual, After Major Storm)		
No evidence of sediment buildup			
Sumps should not be more than 50% full of sediment			
No evidence of erosion at downstream toe of drop structures			
5. Sediment deposition	(Annual)		
Swale clean of sediments			
Sediments should not be > than 20% of swale design depth			
6. Outlets/overflow spillway	(Annual, After Major Storm)		
Good condition, no need for repair			
No evidence of erosion			
No evidence of any blockages			
7. Integrity of biofilter	(Annual)		
Biofilter has not been blocked or filled inappropriately			

Inspection Frequency Key Annual, Monthly, After Major Storm

Action to be taken:

If any of the answers to the above items are checked unsatisfactory, a time frame shall be established for their correction or repair

No action necessary. Continue routine inspections _____
Correct noted facility deficiencies by _____

Facility repairs were indicated and completed. Site reinspection is necessary to verify corrections or improvements.

Site reinspection accomplished on _____

Site reinspection was satisfactory. Next routine inspection is scheduled for approximately:

_____

_____
Signature of Inspector

Infiltration Paving Maintenance Inspection Report

Date_____ Time _____

Project _____

Location _____

Individual Conducting the Inspection _____ "As Built" Plans available ___Y/N___

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11. Inspection frequency shown in parentheses after item being considered

		Satisfactory	Unsatisfactory
1. Debris on infiltration paving parking area	(Monthly)		
Paving area clean of debris			
2. Vegetation	(Monthly)		
Mowing done when needed			
Fertilized per specifications			
No evidence of erosion			
3. Dewatering	(Monthly)		
Infiltration paving dewaters between storms			
4. Sediments	(Monthly)		
Area clean of sediments			
Area vacuum swept on a periodic basis			
5. Structural condition	(Annual)		
No evidence of surface deterioration			
No evidence of rutting or spalling			
Inspection Frequency Key	Annual, Monthly, After Major Storm		

Action to be taken:

If any of the answers to the above items are checked unsatisfactory, a time frame shall be established for their correction or repair

No action necessary. Continue routine inspections _____
Correct noted facility deficiencies by _____

Facility repairs were indicated and completed. Site reinspection is necessary to verify corrections or improvements.

Site reinspection accomplished on _____

Site reinspection was satisfactory. Next routine inspection is scheduled for approximately:

_____

_____
Signature of Inspector

Filtration Facility Maintenance Inspection Report

Date_____ Time _____

Project _____

Location _____

Individual Conducting the Inspection _____ "As Built" Plans available ___Y/N___

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12. Warning: If filtration facility has a watertight cover, be careful regarding the possibility of flammable gases within the facility. Care should be taken lighting a match or smoking while inspecting facilities that are not vented.

13. Inspection frequency shown in parentheses after item being considered

		Satisfactory	Unsatisfactory
1. Debris cleanout	(Monthly)		
Contributing areas clean of debris			
Filtration facility clean of debris			
Inlets and outlets clear of debris			
2. Vegetation	(Monthly)		
Contributing drainage area stabilized			
No evidence of erosion			
Area mowed and clippings removed			
3. Oil and grease	(Monthly)		
No evidence of filter surface clogging			
Activities in drainage area minimize oil & grease entry			
4. Water retention where required	(Monthly)		
Water holding chambers at normal pool			
No evidence of leakage			
5. Sediment deposition	(Annual)		
Filtration chamber clean of sediments			
Water chambers not more than ½ full of sediments			
6. Structural components	(Annual)		
No evidence of structural deterioration			
Any grates are in good condition			
No evidence of spalling or cracking of structural parts			
7. Outlets/overflow spillway	(Annual)		
Good condition, no need for repair			
No evidence of erosion (if draining into a natural chamber)			
8. Overall function of facility	(Annual)		
No evidence of flow bypassing facility			
No noticeable odors outside of facility			
Inspection Frequency Key	Annual, Monthly, After Major Storm		

Action to be taken:

If any of the answers to the above items are checked unsatisfactory, a time frame shall be established for their correction or repair

No action necessary. Continue routine inspections _____
Correct noted facility deficiencies by _____

Facility repairs were indicated and completed. Site reinspection is necessary to verify corrections or improvements.

Site reinspection accomplished on _____

Site reinspection was satisfactory. Next routine inspection is scheduled for approximately:

_____

_____
Signature of Inspector